TRACHOMA IN SINGAPORE

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Trachoma is a chronic viral infection of the eye involving essentially the conjunctiva and cornea and is characterised by the formation of follicles, papillary hypertrophy, and infiltration of the upper half of the cornea—a condition known as pannus; and ultimately leading to scar tissue formation often resulting in severe damage to the cornea and defective vision. It is endemic in most under developed countries and is still the most important cause of blindness in Asia, the Middle East and the Mediterranean Basin.

Trachoma is due to a large atypical virus commonly known as the chlamydozoon trachomatis which appears as free elementary and initial bodies in the conjunctival exudate or more commonly in colonies within epithelial cells as the inclusion bodies of Malberstaedter and Prowazek (HP). Inclusion bodies are best seen in epithelial scrapings taken during the early stages of the disease or when there is an acute infection. This virus was not isolated till 1958 when T'ang et al. first isolated it by culture in yolk-sac treated with streptomycin to control secondary bacterial contamination. This was confirmed by English workers at the Lister Institute in London and later by other workers in different countries.

INCIDENCE OF TRACHOMA

The incidence of trachoma varies considerably in different parts of the world depending on the presence of environmental factors which may favour the spread of the virus. It is estimated that more than 20% of the world's population is affected, but while it is common in India, China and Egypt where in some regions the incidence is almost 100%, it is almost unknown in most countries in North America and Europe.

In its natural state trachoma is not highly contagious and is only made endemic when enviromental factors encourage its spread. The most important factors are the socio-economic condition of the region and the presence of conjunctival infection. In underdeveloped countries, where poverty, dirt, ignorance and overcrowding are still common, the incidence of trachoma is high. Poor hygiene and bad social habits such as the sharing of face towels predispose to the spread of the disease. Further, these conditions themselves lead to a high incidence of infective conjunctivitis which in turn, through its increased secretions facilitates the spread of the virus and moreover adds to the gravity of the condition by causing the activity to be more prolonged, increasing the incidence of corneal complications and the severity of scar formation.

Trachoma is endemic in Singapore. This paper is an analysis of the disease which was started in January 1963 when patients seen by the author at the outpatient sessions of the Eye Clinic, General Hospital, Singapore were examined for clinical features of trachoma. The primary object was to study the clinical features and incidence of trachoma at the Eye Clinic, General Hospital, Singapore, with special reference to patients who are immigrants. It is apparent that such a study has limited significance. Nevertheless, it was felt that it would give an indication of the incidence of trachoma in Singapore. Two separate surveys were done: firstly, 500 consecutive patients seen at the outpatient session of the Eye Clinic for a variety of conditions were examined specially for evidence of trachoma: secondly, 100 consecutive patients with trachoma were studied and the results analysed. The results of the preliminary survey was worth the effort as a number of significant data were found and it seems likely that more will be apparent soon.

TABLE I

INCIDENCE OF TRACHOMA AT OUT-PATIENT EYE CLINIC, GENERAL HOSPITAL, SINGAPORE

	Number	Percentage
No Trachoma	459	91·8%
Trachoma	41	8·2%
Total	500	100%

Table I shows the proportionate morbidity of trachoma in 500 consecutive new cases seen at the outpatient sessions in the Eye Clinic, General Hospital Singapore in 1963 and 1964. Of the 500 patients examined, 459 had no evidence of trachoma, while 41 were found to be suffering from the disease: an incidence of 8·2%.

TABLE II

INCIDENCE OF TRACHOMA IN SINGAPORE AS A CAUSE OF BLINDNESS COMPARED TO THE MAJOR CAUSES OF BLINDNESS REGISTERED AT GENERAL HOSPITAL, 1953-1962

Causes of Blindness	Number	Percentage
Optic atrophy	122	22·5%
Glaucoma	218	22·1%
Corneal Diseases	191	19·4%
(1) TRACHOMA	64	6·4%
(2) Keratomalacia	25	
(3) Corneal Ulcer	37	
(4) Corneal Scarring	75	
Others	355	36%
Total (Known causes)	986	100%
Unclassified Causes	112	-
Total (registered Cases)	1098	-

Table II shows the distribution of the main causes of blindness seen in the 1098 cases of blindness registered at the General Hospital, Singapore from January 1953 to December 1962.

There are two significant findings:

1. the proportionate morbidity of blindness from corneal disease is high—19·4%
2. trachoma was the cause of blindness in 64 cases—6·4%

It may be added that this figure does not include patients who are blind in one eye from trachoma, nor did it include patients who were partially sighted as a result of the disease.

TABLE III

AGE AND SEX DISTRIBUTION OF 100 CASES OF TRACHOMA SEEN AT EYE CLINIC, GENERAL HOSPITAL

Age	Male	Female	Total
1	0	0	0
1 - 4	0	1	1
5 - 14	1	2	3
15 - 24	6	1	7
25 - 44	8	13	21
45 - 64	25	31	56
65	3	9	12
Total	43	57	100

Table III shows the distribution according to age and sex of 100 consecutive patients with trachoma seen at the Eye Clinic, General Hospital, Singapore.

There are several significant findings:

1. the incidence is very low in the younger age group
2. it is most common between the ages of 45 to 64 years
3. there is no significant sex predominance

TABLE IV

RACIAL DISTRIBUTION OF 100 CASES OF TRACHOMA SEEN AT EYE CLINIC, GENERAL HOSPITAL

Race	Number
Chinese	86
Indians	14
Malays	0
Other races	0
Total	100

Table IV shows the distribution of the 100 cases according to race.

The significant findings were:

1. not a single Malay had trachoma in the series
2. all the cases were either in Chinese or in Indians

It is noted that further survey (unpublished) has records of trachoma in Malays and other races, besides Chinese and Indians. However, this was uncommon.

TABLE V

100 TRACHOMA PATIENTS CLASSIFIED ACCORDING TO COUNTRY OF ORIGIN

Country of Origin	Number
Immigrants	
(1) China	77
(2) India	10
(3) Indonesia	1 (Chinese)
(4) Others	0
Born in Malaysia	12
Total	100

Table V shows the 100 cases of trachoma distributed according to their country of origin. It is significant that 88% of the patients were immigrants either from China or from India: there was only one Chinese who came from Indonesia.

DISCUSSION

It is stressed that this survey is limited to patients seen at the Eye Clinic, General Hospital, Singapore. However, as it appears unlikely that a more comprehensive survey of the general population will be conducted in the immediate future, this preliminary study serves to give an idea about the epidemiology of trachoma in Singapore. It should be noted that since the vast majority of the patients seen are 'free' patients, this survey is based largely on persons from the lower income bracket: this is important as socio-economic conditions are closely linked with the prevalence of the disease.

The tables suggest that the endemicity of trachoma is low in Singapore. Table I shows that 8·2% of the 500 patients who came to the Eye Clinic for a variety of ocular complaints were found to have trachoma. Another interesting finding is that 87% of the 100 cases of trachoma analysed are immigrants either from China or India (Table V).

Table III shows that of the 100 cases of trachoma seen at the Eye Clinic, General Hospital, Singapore, there was only one case from 0 - 4 years and three cases from 5 - 14 years. Taking into consideration various possible statistical errors the author considers this a significant finding supporting the suggestion that the endemicity of trachoma in Singapore is low. This is because trachoma is a condition usually contracted in early childhood.

The suggestion that the endemicity of trachoma is low in Singapore is not surprising because trachoma in its natural state is of relatively low contagiousness and only becomes endemic when there are wide-spread environmental factors favouring the transmission of the virus.

Singapore is a relatively prosperous, commercial state, enjoying one of the highest standards of living in South East Asia. Singapore provides an abundant supply of purified water and good medical service which is available at almost no cost to her residents. Another relevant factor is the finding that the majority of persons in the lower income bracket live in reasonably hygienic conditions, generally not sharing their face towels and using water and soap for cleansing purposes frequently.

SUMMARY

1. 500 consecutive outpatients seen at the Eye Clinic, General Hospital were examined especially for trachoma. The incidence of trachoma was found to be 8·2%.
2. 100 patients who were found to have trachoma were analysed according to age, race and country of origin. The significant finding is that 87% are immigrants and 87% either from China or India.

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REFERENCES

1. Duke - Elder, S. (1965): "System of Ophthalmology", Vol. VIII, part I, pages 258-299. Kimpton.
2. MaCallan, (1913): "Trachoma and its complication in Egypt".
3. Mann, I. (1960): "Investigation of the sources of trachoma in the white school population of Western Australia", Brit. J. Ophthalmology, 44, 321.
4. Mann, I., Geer, Perret, and McLean (1960): "Experimental Trachoma produced by a West Australian virus", Brit. J. Ophthalmology, 44, 641.
5. Thygeson, P. (1960): "Trachoma Manual and Atlas", U.S. Department of Health, Education and Welfare Public Health Service Publication.